

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

1. A lighting system variable arc current controller comprising:  
an input power factor correction circuit that supplies boosted and converted DC power from an AC power source; and  
a start-up circuit adapted to provide a starting voltage to an output power conditioning unit, the start-up circuit including a first circuit adapted to provide a first bias voltage supply to the output power conditioning unit and a second circuit adapted to provide a second bias voltage supply to the input power factor correction circuit.

---

2. The controller of claim 1, further comprising a switching unit adapted to control application of the boosted and converted DC power to a lamp unit.

3. The controller of claim 1, wherein the output power conditioning unit is connected to the input power factor correction circuit and to a switching unit.

4. The controller of claim 1, wherein the output power conditioning unit is adapted to control the operation of a switching unit so as to control application of the boosted and converted DC power to a lamp unit.

5. The controller of claim 1, wherein the first circuit is a first voltage doubling rectifier circuit and comprises a first pair of diodes.

6. The controller of claim 5, wherein the second circuit is a second voltage doubling rectifier circuit and comprises a second pair of diodes.

7. The controller of claim 1, wherein the start-up circuit is adapted to provide a starting voltage to the output power conditioning means.

8. The controller of claim 1, wherein the start-up circuit includes a first zener diode electrically connected to the input power factor correction circuit that limits and regulates the second bias voltage supply.

9. The controller of claim 8, wherein the start-up circuit includes a second zener diode electrically connected to the output power conditioning unit that limits and regulates the first bias voltage supply.

10. The controller of claim 1, wherein the output power conditioning unit supplies a heating voltage.

---

11. The controller of claim 1, wherein the output power conditioning unit supplies an arc current.

12. The controller of claim 1, wherein a switching unit is adapted to provide positive and negative DC voltages to a lamp unit.

13. A control system according to claim 1, further comprising a feedback system adapted to sense lamp unit light output and automatically adjust a current level supplied to a lamp unit.

14. A variable arc current supply comprising:  
an input power factor correction unit adapted provide a boosted converted DC power;

at least one lamp unit comprising at least one fluorescent gas discharge lamp including electrodes;

a main output transformer having a primary winding and at least one secondary winding, the primary winding connected to the input power factor correction unit and the at least one secondary winding connected to the electrodes and to the at least one lamp unit;

a switching unit connected to said primary winding of said main output transformer;

an output power conditioning unit adapted to control the switching unit to provide voltage to the primary winding of the main output transformer; and

a start-up unit adapted to provide a starting voltage to the output power conditioning unit, wherein a plurality of rectifier circuits are adapted to provide a bias

voltage supply to the output power conditioning unit and to the input power factor correction unit.

15. The supply of claim 14, wherein the starting unit is adapted to provide a starting voltage to the output power conditioning unit.

---

16. The supply of claim 14, wherein the start-up circuit includes a first zener diode adapted to limit and regulate the bias voltage supply.

17. The supply of claim 14, wherein the start-up circuit includes a second zener diode adapted to limit and regulate the bias voltage supply.

18. The supply of claim 14, wherein a resultant voltage is produced on the at least one secondary winding of the main output transformer and thus provides a heating voltage to the electrodes and the variable arc current to the at least one lamp unit.

19. A method for controlling a variable arc current supplied to a lighting system comprising:

supplying a boosted and converted DC power from an AC power source; and  
providing a starting voltage wherein a first circuit provides a first bias voltage supply to an output power conditioning unit and a second circuit provides a second bias voltage supply to an input power correction circuit.